

# Could the *Shroud of Turin* be an effect of post-mortem changes?

Lucia Tattoli · Michael Tsokos · Claas Buschmann

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## Case report

A 71-year-old man was found dead in his locked apartment in a prone position on the floor of the hallway. The putrefied body was lying with the right side of his face on the floor. The upper limbs were both flexed at the elbows: the right one was underneath the chest, the left one was lying on the ground. The decedent was wearing underwear and socks.

Medical records revealed that the man had suffered from hypertension, diabetes, and stomach problems. The deceased had not been seen for some weeks by other persons.

When the body was removed for examination, a wide reddish-brown stain (Fig. 1) that corresponded to putrefactive body fluid and depicted the exact shape and position of the body, in particular defining the position of the flexed upper limbs clearly, with the right arm close to the neck, was noticed on the carpeted floor. The underwear he had been wearing at the time of death was also recognizable by a lighter colored area of putrefaction staining on the carpet, as was the abdominal region, according to the different putrefactive discoloration of the skin surface.

At medico-legal autopsy, external examination confirmed severe putrefaction of the 168 cm, 51 kg body. Some maggots were present and a dirty greenish-brownish discoloration of the entire body was observed. The skin of the hands was dried and there was skin slippage in some areas. There was no evidence of external injury. Autopsy showed multiple micro hemorrhages of the gastric mucosa, and moderate senile calcific valvular heart disease was also found. No remarkable pathological findings were noticed in the other internal organs. The cause of death remained unclear after autopsy but toxicological investigations indicated the possibility of diabetic coma (acetone 68 mg/kg in the muscle).

## Discussion

The interpretation of post-mortem changes can be a challenge for the forensic pathologist, since the value of external examination and autopsy is reduced as the state of putrefaction advances [1, 2]. The process of putrefaction is temperature dependent and is enhanced by autolysis-induced breakdown products of tissue which favor bacterial spread throughout the whole body [3]. In later stages, the body begins to swell due to the production of gas by bacteria, and the outer layers of the skin slip off the body. Also, a purge of putrid, blood-stained hemolytic fluid from nose, mouth, anus, and vagina occurs due to the increase of putrefaction gas pressure within the thorax and peritoneal cavity. In even later stages, the liquefaction of the tissues is complete and is followed by the drying of surface tissues [4].

Sometimes purging and leaking of putrefactive fluid can extensively stain the material on which the decedent

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L. Tattoli (✉)  
Institute of Legal Medicine, University of Bari, P.zza G. Cesare,  
11, 70124 Bari, Italy  
e-mail: [luciatattoli@libero.it](mailto:luciatattoli@libero.it)

M. Tsokos · C. Buschmann  
Institute of Legal Medicine and Forensic Sciences, University  
Medical Centre Charité, University of Berlin, Turmstr. 21,  
Building N, 10559 Berlin, Germany  
e-mail: [Michael.Tsokos@charite.de](mailto:Michael.Tsokos@charite.de)

C. Buschmann  
e-mail: [Claas.Buschmann@charite.de](mailto:Claas.Buschmann@charite.de)